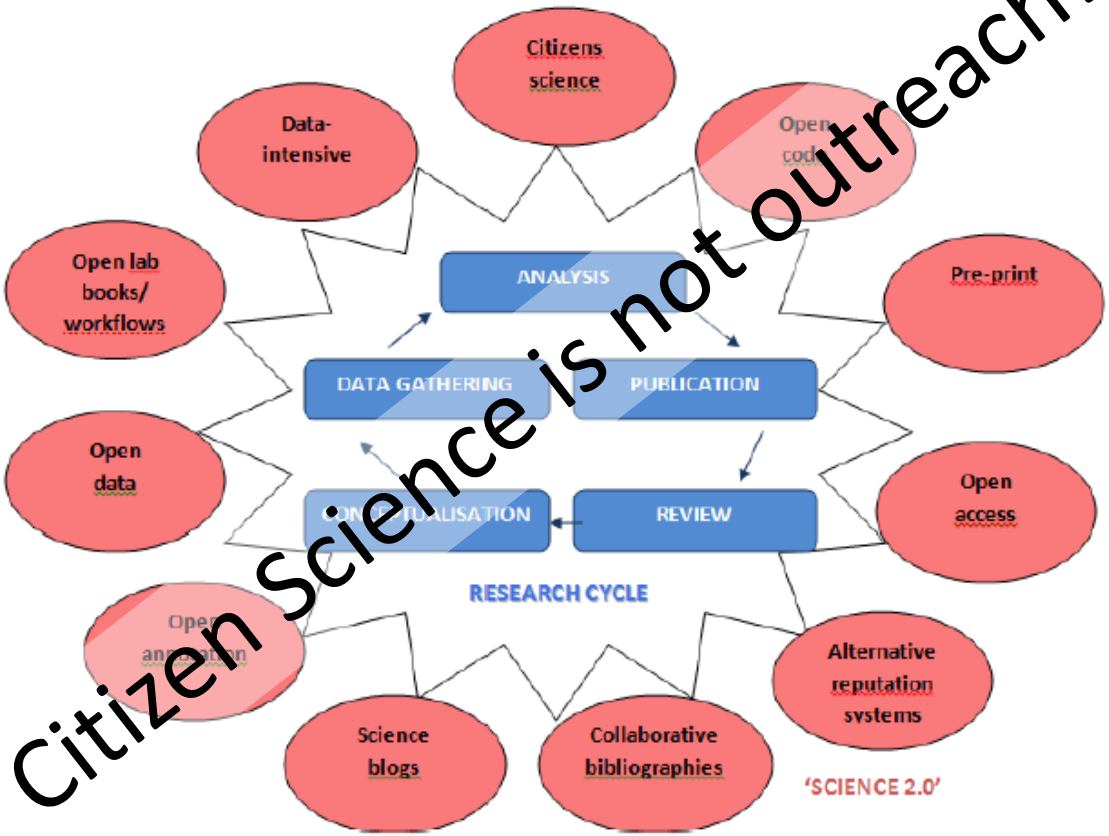
WP2 DECS: Dissemination, Engagement and Citizen Science

Stephen Serjeant

ASTERICS Mid-Term Review

March 2017

Open Science



Citizen Science is not outreach!

DECS

- **D**issemination, **E**ngagement and **C**itizen **S**cience
  Lead: S. Serjeant
- Dissemination & public engagement
- Open ESFRI facilities to wider stakeholders through citizen science (Open Science, or ‘Science 2.0’)
- Audiences: scientific & technical communities, academia, private industry, other public research centres, SMEs, policy makers, general public
- Coordinated citizen science experiments to open ESFRIs & pathfinders/precursors to public
- Educational resources & efficacy metrics

Tasks

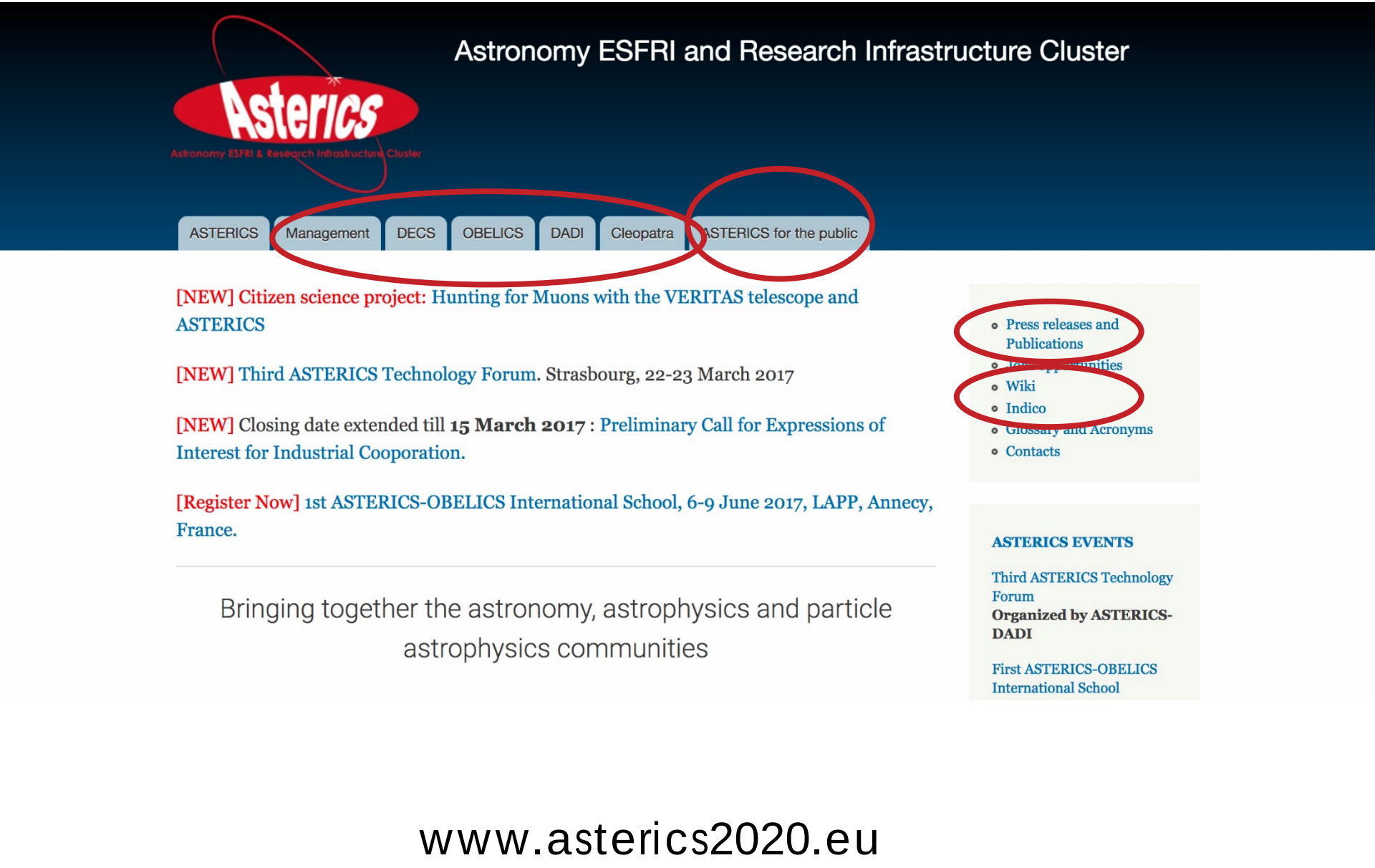
Task	Description
2.1	DECS production (audio, video, text)
2.2	Adapt mass participation infrastructure
2.3	Mass participation experiment operation
2.4	Translation and testing
2.5	Internal dissemination and project outreach

Deliverables

Deliverable	Description	Month	
2.1, 2.2	Website live, brochure publication	3, 12	✓✓
2.3, 2.7	Educational resources for mass participation experiments	23, 35	✓
2.4, 2.8	Online mass participation experiments	23, 35	✓
2.5	Video resources	29	
2.6, 2.9	Open-access publications from mass participation experiments	32, 46	

DECS so far, in a nutshell

DECS production

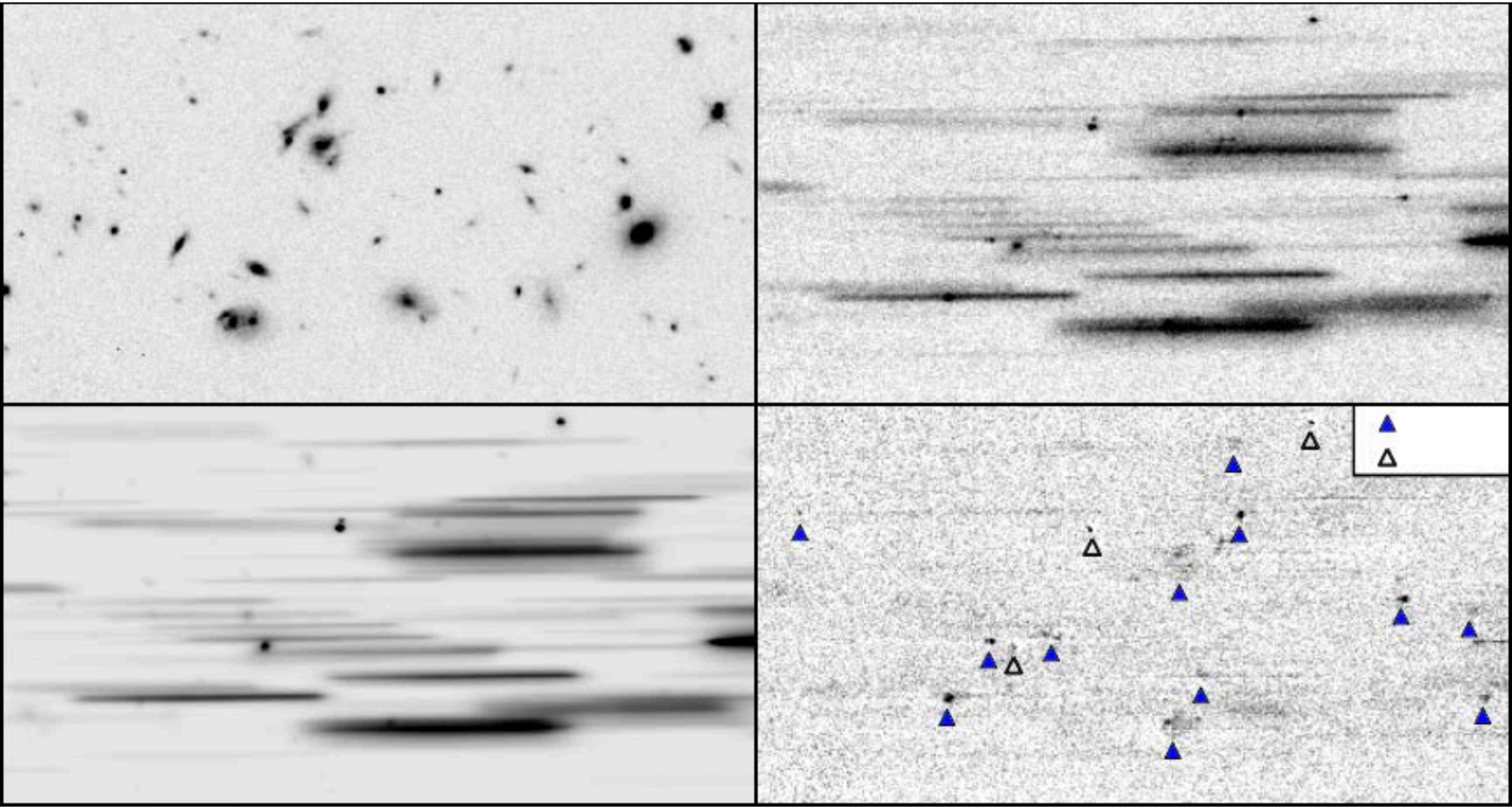


www.asterics2020.eu


No smoking
Exit

Pulsar Hunters ++

- Lead: Rene Breton
- Science goal: Extend the successful Pulsar Hunters Zooniverse project (featured on BBC Stargazing Live) to harder-to-find pulsars
- Activity: interactive data visualization of pulsar time and frequency domain data; future application to SKA

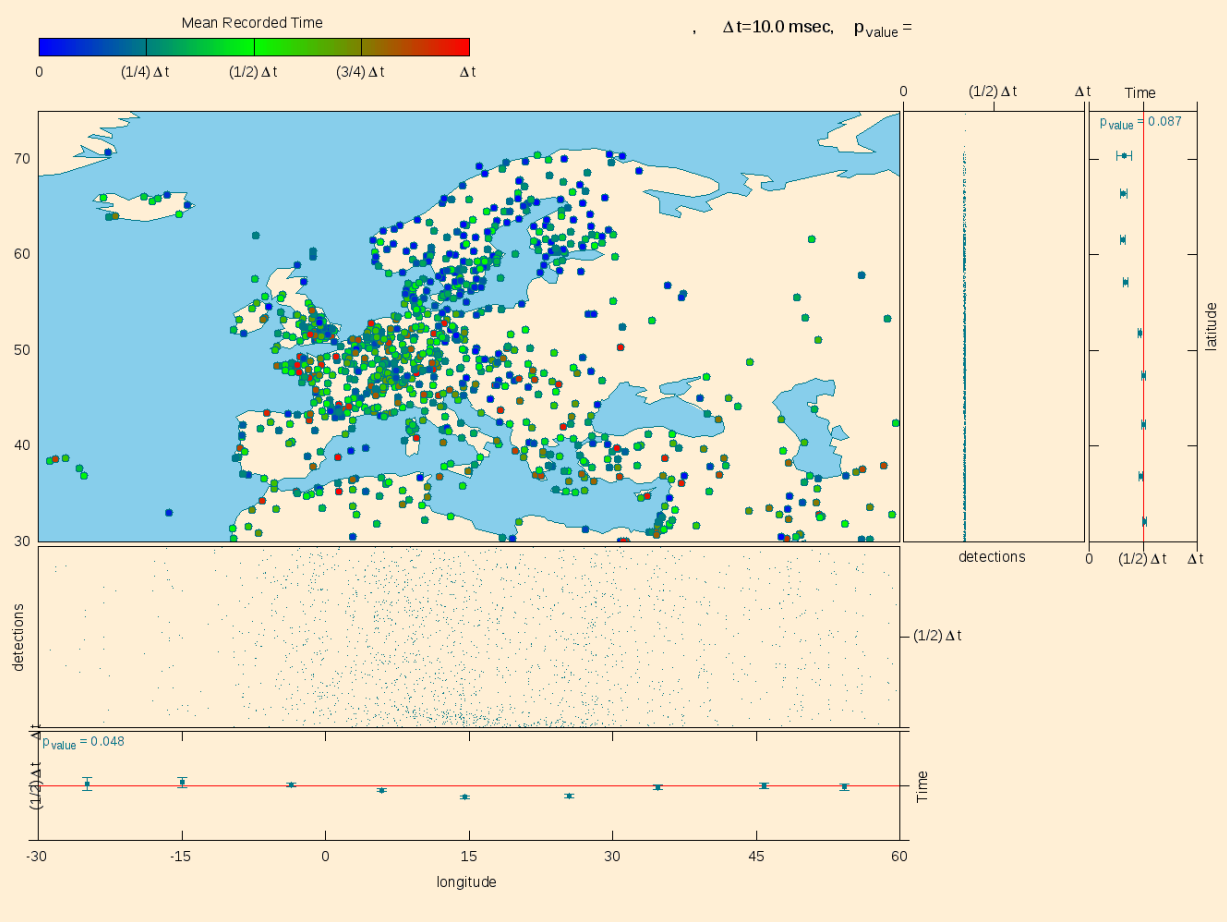


3D-HST ApJS 2012

CREDO: Cosmic Ray Extremely Distributed Observatory

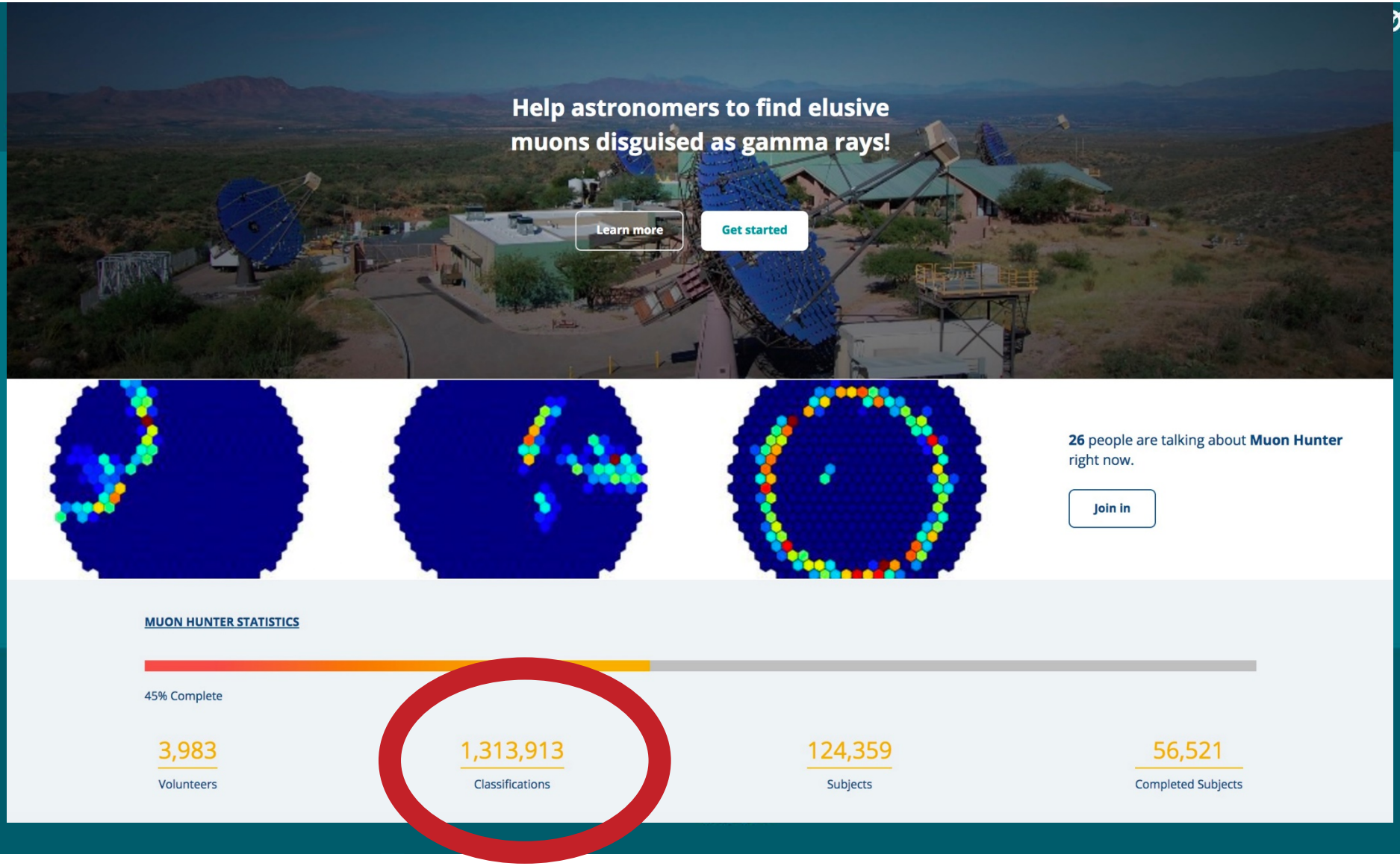
- Lead: Piotr Homola https://credo.ifj.edu.pl/
- Science objective: detect ultra-high-energy charged particles with a whole-Earth Cherenkov detector
- Activity: use mobile phones as charged particle detectors, either while charging (so horizontal) or while playing Pokemon Go (so orientation known)
- First CREDO meeting in August 2016: (47 registrants, 9 countries, 13 nationalities), quite good media coverage (TV, radio, daily press)
- **“Please feel free to convey my view of the importance of ASTERICS action in the case of CREDO: inspiration, practical know-how, valuable interpersonal exchange.”**

CREDO: Dark Universe Welcome

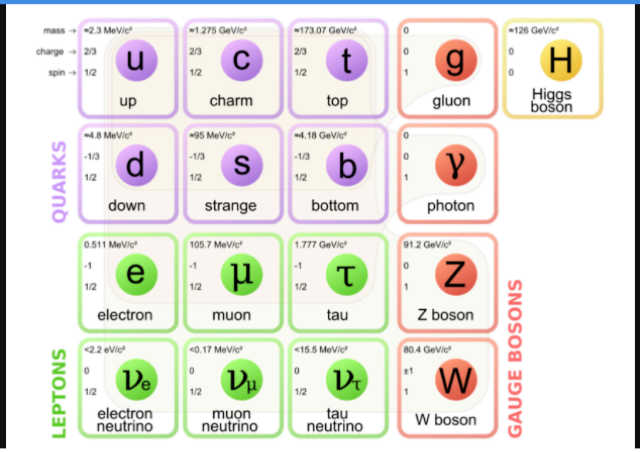


Muon Hunters

- Lead: Lucy Forston, CTA
- Science goal: detect fainter Cherenkov events by visual classification
- Activity: classify hadron vs. photon events in the CTA telescopes, morphologically and in the time domain; apply first to simulations and to e.g. HESS



1.3 million classifications in the first five days!



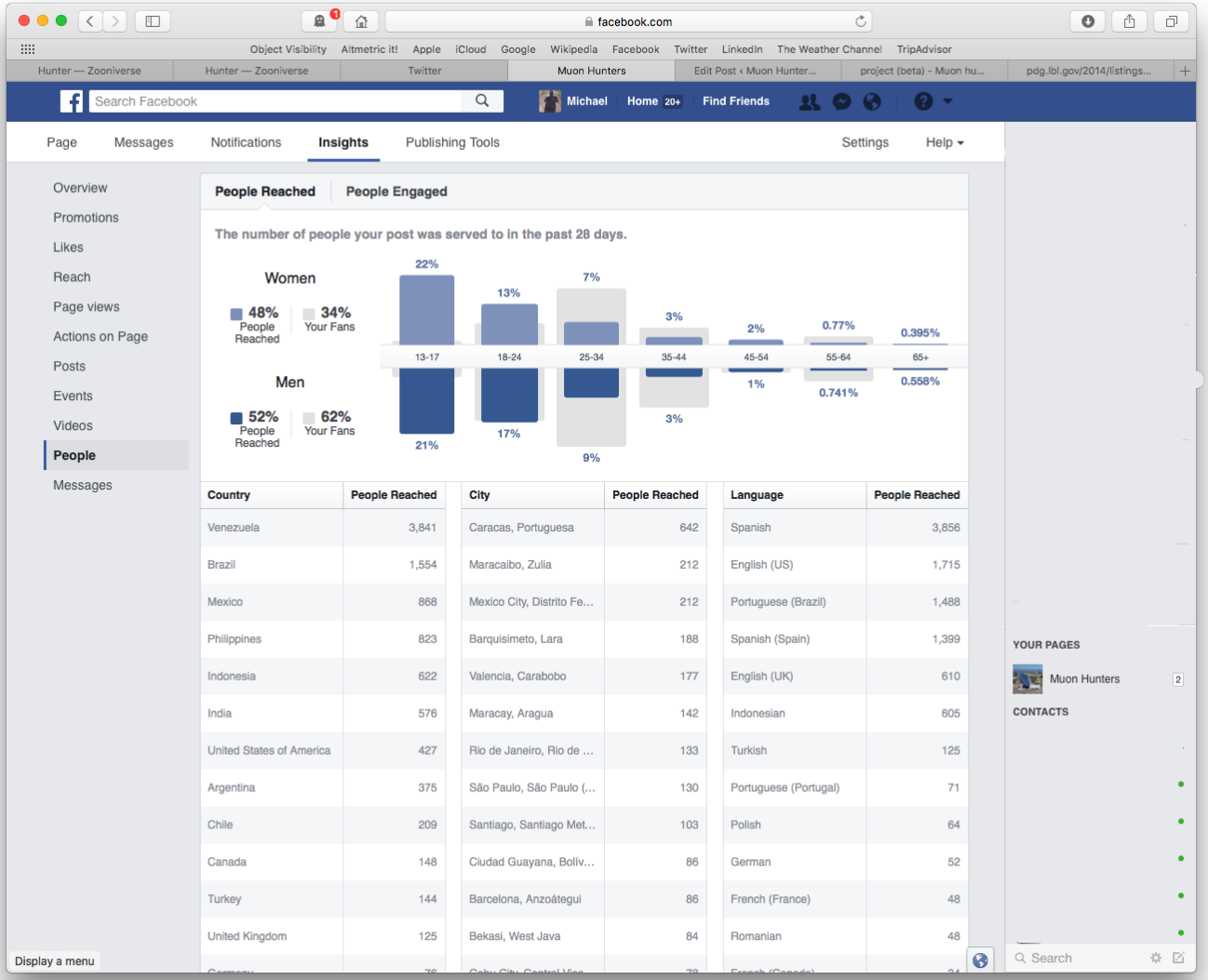
The 'standard model' of particle physics. The electron and muon can be found in green boxes halfway down the diagram.

So what is a muon?

A muon is a type of subatomic particle, which is very similar to an electron – for instance, they both have the same negative electric charge. The main difference between a muon and an electron is their mass. A muon is 207 times more massive than an electron! For comparison, you might have known that the mass of a proton (the nucleus of a hydrogen atom), is about 1,800 times that of an electron. However, unlike the proton, which has substructure and is composed of other particles, the muon is a fundamental particle in its own right.

If you think the existence of the muon is strange, you're in good company. The world-famous physicist I. I. Rabi, when first told of the discovery of the muon, said in response, "Who ordered that?" There's good reason why the muon is such an unfamiliar particle: muons are radioactive; they decay with a mean lifetime of 2.2 microseconds. That's 2.2×10^{-6} seconds, or 2.2 millionths of a second. Muons don't stick around long enough to become part of the matter we encounter day to day.

However, there are lots and lots of muons all around us, created in interactions we don't usually think of...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Actions on Page
Posts
Events
Videos
People
Messages
People Reached
People Engaged
The number of people your post was served to in the past 28 days.
Women
48% People Reached
34% Your Fans
Men
52% People Reached
62% Your Fans
22%
13%
7%
3%
2%
0.77%
0.395%
21%
17%
9%
3%
1%
0.741%
0.558%
13-17
18-24
25-34
35-44
45-54
55-64
65+
Country | People Reached
Venezuela 3,841
Brazil 1,554
Mexico 868
Philippines 823
Indonesia 622
India 576
United States of America 427
Argentina 375
Chile 209
Canada 148
Turkey 144
United Kingdom 125
City | People Reached
Caracas, Portuguesa 642
Maracaibo, Zulia 212
Mexico City, Distrito Fe... 212
Barquisimeto, Lara 188
Valencia, Carabobo 177
Maracay, Aragua 142
Rio de Janeiro, Rio de ... 133
São Paulo, São Paulo (... 130
Santiago, Santiago Met... 103
Ciudad Guayana, Bolív... 86
Barcelona, Anzoátegui 86
Bekasi, West Java 84
Language | People Reached
Spanish 3,856
English (US) 1,715
Portuguese (Brazil) 1,488
Spanish (Spain) 1,399
English (UK) 610
Indonesian 605
Turkish 125
Portuguese (Portugal) 71
Polish 64
German 52
French (France) 48
Romanian 48
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Muon Hunters
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DECS Forward Look

- First two mass participation experiments scheduled to go live in March 2017 – one already live
- Educational resources ready at the same time; promotional animations under development
- Next Citizen Science workshop in 2017 at INAF
- Publications of the Astronomical Society of Australia would like to publish the Citizen Science workshop results